Reinforcing resilience of banana production systems against the threats of Fusarium wilt disease worldwide

A collaborative initiative for a global programme to prevent and manage Fusarium wilt disease

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Relevance to FAO

Strategic Objectives:

- **SO 2:** Sustainable production
- **SO 3:** Efficient food systems
- **SO 5:** Increase resilience to threats
  - Emergency Prevention System (EMPRES)

Activities

- **Advocacy / consultations**
  - News releases, events in Rome (CCP, IPPC)
  - International consultations
  - WBF task force activities
  - Awareness raising
Activities on the ground

- **Latin America and Caribbean**
  - Workshops (Trinidad and Tobago, Ecuador, Guatemala, Costa Rica..)
  - Assessments, sensitization
  - Contingency planning, diagnostics
  - Regional collaboration, trainings

- **Asia:**
  - Participation in events in Philippines, China (BAPNET, INREF..)
  - Regional collaboration

- **Africa:**
  - Consortium on Foc TR4 strategy for Africa
  - Emergency support to Mozambique
  - Regional projects
Emergency support to Mozambique

- Awareness raising/advocacy
- Surveillance
- National strategy
- Capacity building/Training
- Containment

Mozambique affected by the destructive Panama disease of banana

Panama disease, caused by the fungal pathogen *Fusarium oxysporum* f. sp. *cubense* (Foc), is a devastating banana disease that causes losses up to 100% in affected areas. The disease occurs in countries such as Australia, China, Taiwan, Philippines, Indonesia, Malaysia, Oman, Jordan, Pakistan and now Mozambique. In Mozambique, the disease was identified near Monapo in the Nampula province in September 2015, and in the Chipe district in the Cabo Delgado province in 2016. Containment measures are being implemented in collaboration with the Ministry of Agriculture and Food Security and its partners. Mozambique is the first country in Africa that reported Foc T31, a more virulent strain of the fungus, and is particularly vulnerable. The Panama disease fungus in soil offers a potential threat of propagating material such as seeds and cuttings, and from infected plants, irrigation water, the movement of people and vehicles may spread the disease, and agricultural implements used during farming programmes to contain Foc T31 in the affected zones and prevent its introduction into disease-free areas

- It is forbidden to retrieve plants and cuttings from affected banana farms in the Mozambique and Chipe districts of the Nampula and Cabo Delgado provinces, respectively, to unaffected areas, to control Foc T31 contamination in the affected areas and prevent its dissemination to disease-free areas.
- It is forbidden to move banana plants and cuttings from the Nampula and Cabo Delgado provinces to the rest of the country to prevent the banana summit and ensure the safety of families who currently cultivate banana in the country.
- It is forbidden to receive and other banana plants material that have transmitted disease from infected to banana from other areas. This material comes directly from the virus, and should not exist in any banana production field. To avoid the introduction of the disease, such materials are not allowed.

Any additional information may be required by the national government services.
Global Programme on prevention of Foc TR4

More resilient banana systems with reduced disease risks and impact

Improved prevention

- Surveillance, monitoring and early warning conducted
- Risk analysis and phytosanitary regulations improved
- Containment improved

Improved integrated management

- Resistance screening and Variety development supported
- Integrated disease management improved

Enhanced synergies, capacities and policy environment for improved prevention and management of Fusarium wilt disease

- International collaboration strengthened
- Policies, strategies, awareness enhanced
- National capacities improved

FOOD CHAIN CRISIS Management Framework
<table>
<thead>
<tr>
<th>Outcome 1. Enhanced enabling environment and capacities to develop and implement strategies for improved prevention and management of banana Fusarium wilt disease worldwide</th>
<th>Outcome 2. Improved prevention of spread of Foc into non affected areas and countries</th>
<th>Outcome 3. Improved integrated management of the disease at field level</th>
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</thead>
<tbody>
<tr>
<td><strong>OUTPUT 1: International synergy, collaboration and knowledge sharing enhanced</strong></td>
<td><strong>OUTPUT 2: Policies, strategies and awareness improved at all levels for effective prevention and management of the disease</strong></td>
<td><strong>OUTPUT 3: Capacities strengthened for improved management, containment and prevention</strong></td>
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<tr>
<td>1.1. Promote and support international and regional collaboration and networking to manage Foc globally</td>
<td>2.1. Develop and promote global, regional and national strategies for improved prevention, preparedness and management</td>
<td>3.1. Strengthen technical capacities of regional and national institutions in disease prevention and management</td>
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<td>1.2. Organize international and regional technical consultations, workshops and meetings</td>
<td>2.2. Develop national and regional contingency plans through improving coordination among stakeholders</td>
<td>3.2. Improve human resources of national institutions in diagnosis, management and prevention</td>
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<td>1.3. Support technical field study exchanges and south-south collaboration</td>
<td>2.3. Advocate and raise awareness among stakeholders including public institutions, farmers, NGOs and industry</td>
<td>3.3. Strengthen infrastructure of national institutions in surveillance, management and prevention</td>
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<td>1.4. Facilitate knowledge sharing and dissemination internationally and locally</td>
<td>2.4. Analyse and develop policy and financial arrangement options and requirements for management, prevention and containment</td>
<td>3.4. Conduct training for farmers, farm workers and quarantine inspectors in diagnosis, management and prevention</td>
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<td><strong>OUTPUT 4: Surveillance, early detection and monitoring approaches and systems improved</strong></td>
<td><strong>OUTPUT 5: Risks assessed, and phytosanitary regulations and practices enhanced</strong></td>
<td><strong>OUTPUT 6: Effective containment measures developed and introduced</strong></td>
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<td>4.1. Provide technical support and guidance for improved diagnosis, surveillance and monitoring</td>
<td>5.1. Conduct pest risk analysis and identify regional and national spread pathways</td>
<td>6.1. Assess and document efficiency of containment methods, tools and measures</td>
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<td><strong>OUTPUT 7: Collaborative development and deployment of varieties and hybrids with resistance to Foc TR4</strong></td>
<td><strong>OUTPUT 8: Integrated management practices and systems approach improved to suppress the disease at field level</strong></td>
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<td>7.2. Screen banana genepool to identify Foc TR4 resistance sources</td>
<td>8.2. Develop and introduce plant and soil health promoting practices and system approaches to suppress the disease and its impact</td>
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<td>7.3. Develop varieties and hybrids with resistance to Foc TR4</td>
<td>8.3. Improve seed materials accessible</td>
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<td>7.4. On-farm evaluation and deployment of promising varieties and hybrids</td>
<td>8.4. Promote biodiversification and integrated disease management practices to improve resilience in different production systems</td>
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</tbody>
</table>
Prioritised actions

Prevention
- Awareness raising
- Regulations
- Preparedness
- Risk assessments
- Contingency planning
- Seed system support

Prevention, preparedness, and response
- Risk assessments
- Regulations
- Contingency planning
- Seed system support
- Resistant / tolerant varieties
- Research and surveillance

Management / Rehabilitation
- Resistant / tolerant varieties
- Seed production support
- Research and dev.
- Agronomic practices
- Cropping system
- Regulations
Approach

- **Principles:**
  - Complement existing efforts, promote synergies facilitate collaborations,
  - Prioritized activities and strategies based on production systems, geographies and risk levels.

- **Collaboration:**
  - International organizations / institutions / initiatives (Bioversity international, IITA, IAEA…)
  - International and regional networks and institutions (Promusa, TFNet…)
  - International / Regional Plant Protection Organizations, e.g. IPPC, IAPSC, OIRSA, NEPPO, APPPC…
  - Advanced universities
  - National Institutions
  - Industry, NGOs (WBF…)

FOOD CHAIN CRISIS Management Framework
No panic but vigilance

Planning critical

Threat is real - Act

Prevention is best

Work together